Augmented Reality in the Oil/Gas/Electric Industry

Industry Connections Activity Initiation Document (ICAID)

Version: 3.0, 15 February 2018

IC16-004-03

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Instructions

- Instructions on how to fill out this form are shown in red. It is recommended to leave the instructions in the final document and simply add the requested information where indicated.
- Shaded Text indicates a placeholder that should be replaced with information specific to this ICAID, and the shading removed.
- Completed forms, in Word format, or any questions should be sent to the IEEE Standards Association (IEEE-SA) Industry Connections Committee (ICCom) Administrator at the following address: industryconnections@ieee.org.
- The version number above, along with the date, may be used by the submitter to distinguish successive updates of this document. A separate, unique Industry Connections (IC) Activity Number will be assigned when the document is submitted to the ICCom Administrator.

1. Contact

Provide the name and contact information of the primary contact person for this IC activity. Affiliation is any entity that provides the person financial or other substantive support, for which the person may feel an obligation. If necessary, a second/alternate contact person's information may also be provided.

Name: Mubarik Choudry
Email Address: mubarik.choudry@shell.com
Phone: +1 832-797-4842
Employer: Royal Dutch Shell
Affiliation: Royal Dutch Shell

Name: John Simmins
Email Address: jsimmins@epri.com
Phone: 865-218-8110
Employer: Electric Power Research Institute
Affiliation: Electric Power Research Institute

2. Participation and Voting Model

Specify whether this activity will be entity-based (participants are entities, which may have multiple representatives, one-entity-one-vote), or individual-based (participants represent themselves, one-person-one-vote).

Entity-Based

Purpose

2.1. Motivation and Goal

Briefly explain the context and motivation for starting this IC activity, and the overall purpose or goal to be accomplished.

IEEE hosted a workshop in October 2015, exploring the application of augmented reality (AR) solutions in the oil and gas industry. Coupled with interest within the electric power industry, workshop participants expressed an interest in forming an ongoing interest group to facilitate collaboration in identifying requirements, standards needs and other issues, to help enable AR solutions, as well as potentially mixed and virtual reality solutions, that can benefit these industries.

Existing augmented reality devices have not yet achieved a state of readiness for widespread application in the oil, gas, and electric industries. "Heads up Display" type devices are of particular interest, however a variety of issues need to be overcome including ruggedness, wireless connectivity, use case viability and human factors considerations.

While each of the represented industries have some industry-specific interests, there are sufficient commonalities such that aggregating efforts is anticipated to provide a beneficial approach to achieving efficient solutions. Both hardware and software issues can be largely influenced by standards.

Participants in this activity will identify existing standards, and standards in progress that are relevant and valuable to supporting AR in the electric/oil/gas industries, as well as identifying gaps where new standards efforts are recommended – analysis will include not only IEEE standards, but standards and specification available via other SDOs, alliances, etc. Use Cases will also be an area of work activity – development of a collection of use cases that are 1) of mutual interest across electric/oil/gas, 2) of segment specific interest. Prioritize use cases and identify applicable standards and gaps in existing standards

2.2. Related Work

Provide a brief comparison of this activity to existing, related efforts or standards of which you are aware (industry associations, consortia, standardization activities, etc.).

There is related work going on in the Industry Connections AR/VR advisory board activity, however this proposed activity is more industry specific – coordination will take place with the this group. Also, the standards listed below have active participation and may have application relevant to this work:

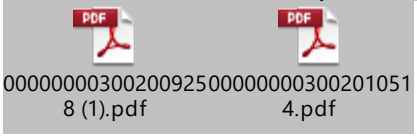
- P2048.1 Standard for Virtual Reality and Augmented Reality: Device Taxonomy and Definitions
- P2048.2 Standard for Virtual Reality and Augmented Reality: Immersive Video Taxonomy and Quality Metrics

- P2048.3 Standard for Virtual Reality and Augmented Reality: Immersive Video File and Stream Formats
- P2048.4 Standard for Virtual Reality and Augmented Reality: Person Identity
- P2048.5 Standard for Virtual Reality and Augmented Reality: Environment Safety
- P2048.6 Standard for Virtual Reality and Augmented Reality: Immersive User Interface
- P2048.7 Standard for Virtual Reality and Augmented Reality: Map for Virtual Objects in the Real World
- P2048.8 Standard for Virtual Reality and Augmented Reality: Interoperability between Virtual Objects and the Real World
- P2048.9 Standard for Virtual Reality and Augmented Reality: Immersive Audio Taxonomy and Quality Metrics
- P2048.10 Standard for Virtual Reality and Augmented Reality: Immersive Audio File and Stream Formats
- P2048.11 Standard for Virtual Reality and Augmented Reality: In-Vehicle Augmented Reality
- P2048.12 Standard for Virtual Reality and Augmented Reality: Content Ratings and Descriptors

2.3. Previously Published Material

Provide a list of any known previously published material intended for inclusion in the proposed deliverables of this activity.

EPRI has published several reports in this area. Two, publically available reports are included. The IEEE whitepapers planned to be developed under this activity will be informed based on updated versions of these.



2.4. Potential Markets Served

Indicate the main beneficiaries of this work, and what the potential impact might be.

This activity will focus on benefits for the oil, gas and electric industries, with a focus on end users within these industries. Device vendors will also benefit by better understanding market specific technical needs to consider in meeting these customer needs.

3. Estimated Timeframe

Indicate approximately how long you expect this activity to operate to achieve its proposed results (e.g., time to completion of all deliverables).

Expected Completion Date: 12/2018

IC activities are chartered for two years at a time. Activities are eligible for extension upon request and review by ICCom and the IEEE-SA Standards Board. Should an extension be required, please notify the ICCom Administrator prior to the two-year mark.

4. Proposed Deliverables

Outline the anticipated deliverables and output from this IC activity, such as documents (e.g., white papers, reports), proposals for standards, conferences and workshops, databases, computer code, etc., and indicate the expected timeframe for each.

This activity will focus on development of 2 white papers.

Initial Deliverables
1) Summary report on standards landscape relative to AR for electric/oil/gas, with particular interest in Head Mounted/Heads Up Display solutions;

2) Initial draft of a Use Case document - this may be a living document that is regularly updated. In progress. There is Use Case work being sponsored at EPRI by one of its clients. EPRI plans on developing a use case repository, similar to what it did with smart grid use cases - http://smartgrid.epri.com/Repository/Repository.aspx . This can be in conjunction with IEEE deliverables under this activity.

Two white papers will be developed based on developing requirements for use of these type of technology in the industrial environments of the Oil and Gas and Electrical Grid. These are in progress and will be published by the 3/2020 deadline.

Where standards needs are identified, project authorization requests (PARs) may also be developed as applicable.

5. Funding Requirements

Outline any contracted services or other expenses that are currently anticipated, beyond the basic support services provided to all IC activities. Indicate how those funds are expected to be obtained (e.g., through participant fees, sponsorships, government or other grants, etc.). Activities needing substantial funding may require additional reviews and approvals beyond ICCom.

No additional funding requests are anticipated for services beyond the standard services provided for IC programs. Activity members will provide any needed support for hosted meetings, marketing activities that exceed basic IC support. If needed, EPRI has some funding available to support this work through one of its members.

6. Management and Procedures

6.1. IEEE Sponsoring Committee

Indicate whether an IEEE sponsoring committee of some form (e.g., an IEEE Standards Sponsor) has agreed to oversee this activity and its procedures.

The IEEE Industrial Applications Society will sponsor this activity

Has an IEEE sponsoring committee agreed to oversee this activity?: Yes/No

If yes, indicate the sponsoring committee's name and its chair's contact information.

Sponsoring Committee Name: IEEE Industrial Applications Society
Chair's Name: Mark Halpin
Chair's Email Address: halpism@auburn.edu

IEEE Digital Senses Initiative/IEEE Consumer Electronics Society
Chair/Contact: Yu Yuan
Email: y.yuan@ieee.org

6.2. Activity Management

If no IEEE sponsoring committee has been identified in 7.1 above, indicate how this activity will manage itself on a day-to-day basis (e.g., executive committee, officers, etc).

The activity will be managed by an executive committee as defined in the activity's policies and procedures.

6.3. Procedures

Indicate what documented procedures will be used to guide the operations of this activity; either a) modified baseline *Industry Connections Activity Policies and Procedures,* or b) Sponsor or Working Group policies and procedures accepted by the IEEE-SA Standards Board. The chosen policies and procedures must be reviewed by ICCom

Will use the baseline Industry Connections Activity Policies and Procedures.

7. Participants

7.1. Stakeholder Communities

Indicate the stakeholder communities (the types of companies or other entities, or the different groups of individuals) that are expected to be interested in this IC activity, and will be invited to participate.

Representatives of the oil, gas and electric utility industries, along with suppliers of augmented reality products. Initial interested stakeholders include:

Electric Power Research Institute (EPRI)
Shell
BP
Exxon Mobile
Vuzix

GuardHat
WearNext
Atheer
Augmate
APXlabs
Accenture
GNOSYS
FuelFX
Phillips 66
Brainwaive

7.2. Expected Number of Participants

Indicate the approximate number of entities (if entity-based) or individuals (if individual-based) expected to be actively involved in this activity.

15-20

7.3. Initial Participants

Provide a list of the entities or individuals that will be participating from the outset. It is recommended there be at least three initial participants for an entity-based activity, or five initial participants (each with a different affiliation) for an individual-based activity.

Use the following table for an entity-based activity:

Entity	**Primary Contact**	**Additional Representatives**
Royal Dutch Shell	Mubarik Choudry, Mubarik.Choudry@shell.com	Name, Email Address Name, Email Address
Electric Power Research Institute	John Simmins, jsimmins@epri.com	
Brainwaive LLC	Tony Hodgson, thodgson@brainwaive.com	
Perey Consulting	Christine Perey, cperey@perey.com	
University of Michigan	Philipp Rauschnabel, prausch@umich.edu	
Augmate	Pete Wassell, pete@augmate.com	

Use the following table for an individual-based activity: